

ROCKY MOUNTAIN ACADEMY (PWSNO 1110024) SOURCE WATER ASSESSMENT REPORT

November 30, 2001



State of Idaho Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the watershed characteristics.

This report, *Source Water Assessment for Rocky Mountain Academy* describes the public drinking water system, the zone of water contribution, and the associated potential contaminant sources located within the watershed. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Rocky Mountain Academy drinking water source consists of two springs located at the base of a small watershed. Because the springs are directly influenced by surface water, spring water is filtered and disinfected before being distributed. IDEQ conducted a susceptibility analysis December 28, 2000 to assess the springs' vulnerability to four classes of contaminants. The spring automatically ranked highly susceptible to microbial contamination because of the surface water influence. Vulnerability to inorganic chemical (IOC) and organic chemical (VOC, SOC) contamination is low because the spring diversion structures are well constructed and maintained, and the recharge zone for the springs is mostly an undeveloped wooded area with a tree farm covering about 20 percent of the delineated watershed.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Rocky Mountain Academy, source water protection activities should focus on maintaining the high quality of its water by maintaining the watershed. Because some of recharge area for the springs is outside the direct jurisdiction of Rocky Mountain Academy, partnerships with private landowners and public agencies with administrative authority in the area should be established to ensure that any land use changes in the watershed do not degrade it. Source water protection activities should be aimed at short-term management strategies with the development of long-term management strategies to counter any future contamination threats.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact your regional IDEQ office or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR ROCKY MOUNTAIN ACADEMY

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted.

It is important to review this information to understand what the ranking of this source means. A map showing the delineated source water assessment area, and the inventory of significant potential sources of contamination identified within the delineated area are included. Significant potential contaminant sources found in the delineation are listed and the worksheet used to develop the assessment also is attached.

Background

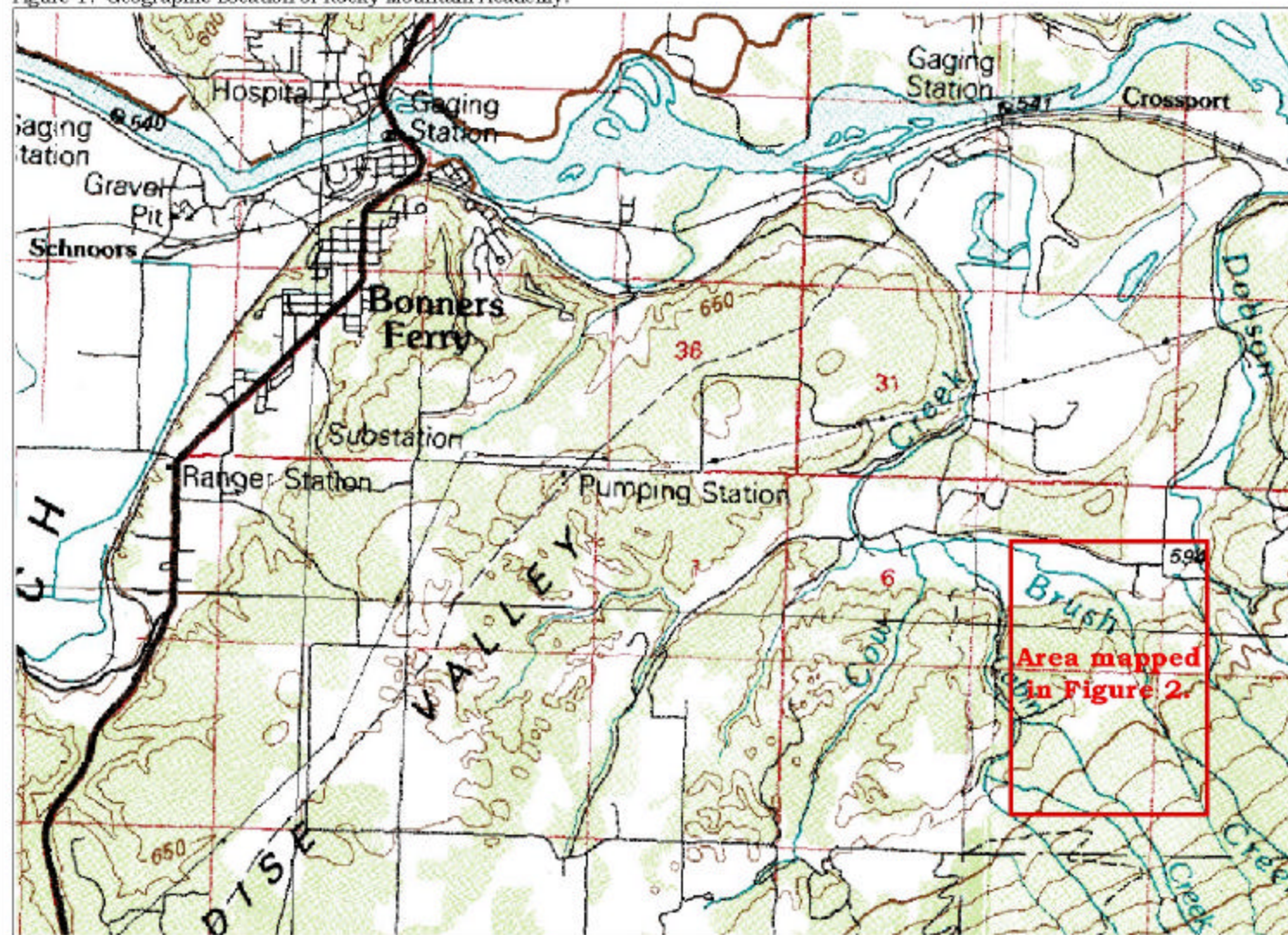
Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the intakes and watershed characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, time and resources to accomplish the assessments are limited. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply. The Idaho Department of Environmental Quality (IDEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. IDEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. Geographic Location of Rocky Mountain Academy.



Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Rocky Mountain Academy water system serves a community of about 150 people at a residential school located near Bonners Ferry, Idaho (Figure 1). The public drinking water source for Rocky Mountain Academy is comprised of two springs at the base of a 156-acre watershed. The springs are ground water under direct influence of surface water and as such are susceptible to microbial contamination. The GWUDI determination was made following an analysis completed in 1993

Water from the springs is collected in concrete cisterns, then is passed through a slow sand filter and is chlorinated before distribution. Other than naturally occurring microbial contamination, Rocky Mountain Academy has experienced few water quality problems. The system tests for monthly for bacteria, annually for inorganic chemicals (IOCs) including nitrates, and less frequently for organic chemicals (VOCs and SOCs), radiological contaminants, and lead and copper. Low concentrations of fluoride and the unregulated contaminants sodium, and sulfate are present in the water. Radionuclides in concentrations well below the Maximum contaminant Level have been detected in the water since testing began in 1986.

Defining the Zones of Contribution--Delineation

The EPA requires that the entire drainage basin be delineated upstream from the intake to the hydrologic boundary (U.S. EPA, 1997b). The delineation process establishes the physical area around an intake that becomes the focal point of the assessment and source water protection activities. For Rocky Mountain Academy the boundaries of the small watershed above the springs as they appear on a 7.5-minute USGS topographic map are the boundaries of the delineation.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by IDEQ and from available databases.

Undeveloped woodland and meadow is the dominant land use in the Rocky Mountain Academy source water protection zone. An ephemeral stream flows near the springs. Part of the watershed is used for tree farming.

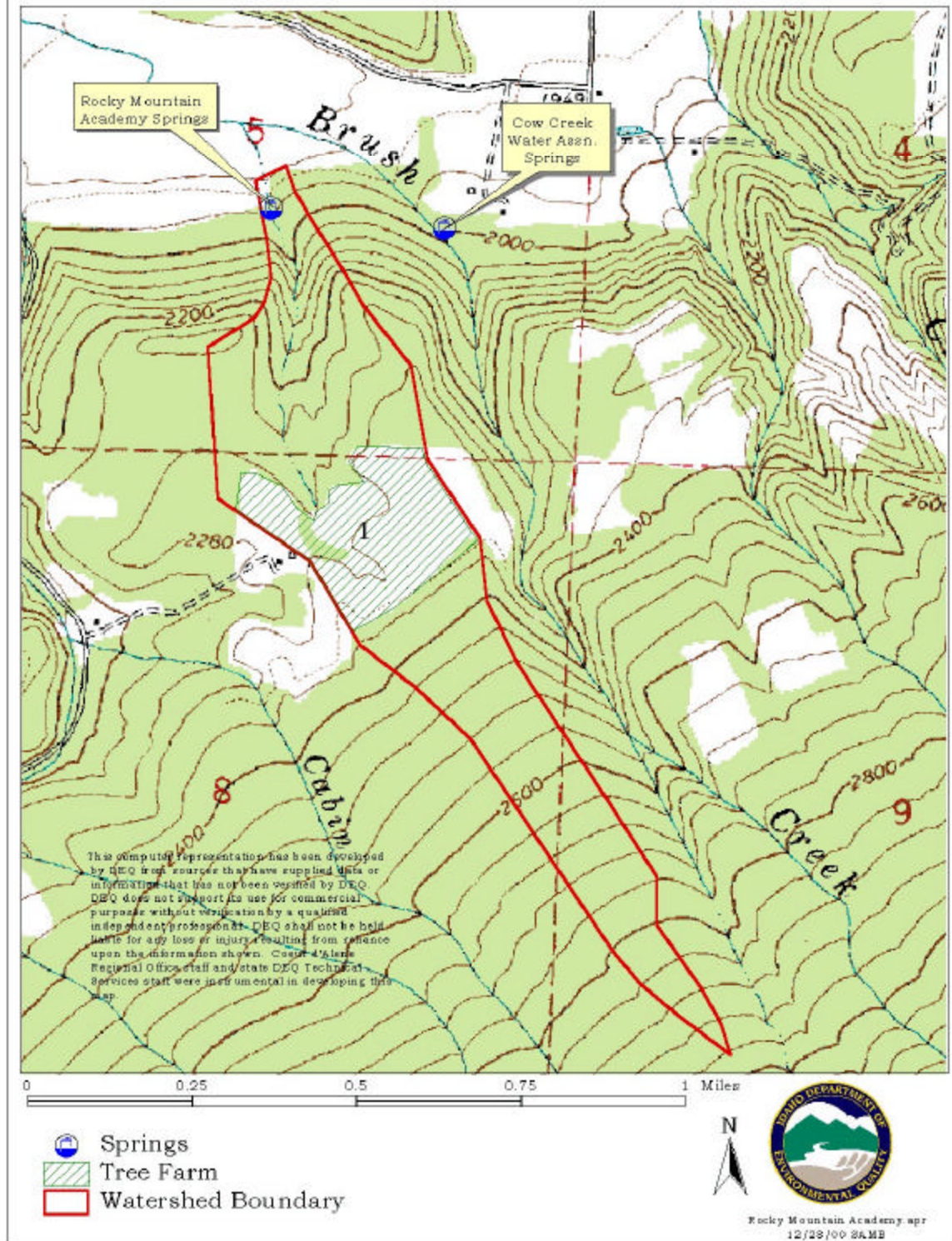
It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation.

What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

IDEQ conducted a contaminant inventory of the source water assessment area by identifying and documenting potential contaminant sources through the use of computer databases and Geographic Information System (GIS) maps. Other than naturally occurring sources of bacteria and sediment, the only potential contaminants identified in the area delineated for the springs are fertilizers and herbicides used at the tree farm. Figure 2 shows the location of the springs, the watershed boundaries, and the approximate boundaries of the tree farm.

Figure 2. Rocky Mountain Academy Delineation.



Section 3. Susceptibility Analysis

The potential for contamination of a source due to inorganic chemicals, organic chemicals or microbes is ranked high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity and construction of the intake, land use characteristic, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. A high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each intake is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking. The susceptibility analysis worksheet for your system is on page 12 of this report.

Intake Construction

The ability of an intake to protect the water it collects from contaminants is directly affected by the way it is constructed. Low scores on this portion of the susceptibility analysis imply an intake better able to safeguard the source. The Rocky Mountain Academy diversion structures are concrete cisterns with recessed inspection holes. No construction defects were noted on the most recent (1996) sanitary survey of the system.

Potential Contaminant Source and Land Use

The springs were automatically ranked highly susceptible to microbial contamination because of their GWUDI status. One land use/potential contaminant point was added to each of the contaminant categories because of naturally occurring turbidity. In addition to reducing the effectiveness of water treatment systems, turbidity or fine sediment is often a vehicle for transporting other contaminants through the watershed. Two points were added to the IOC and SOC tallies to reflect the potential for contamination from fertilizer and herbicide use on the tree farm, which is situated at the head of the ephemeral stream that drains toward the springs.

Final Source Ranking

Both of the Rocky Mountain Academy springs were automatically ranked highly susceptible to microbial contamination. Susceptibility to other classes of contaminants is low. The final susceptibility scores and rankings for the Rocky Mountain Academy springs are summarized in Table 1. The Susceptibility Analysis worksheet on page 12 shows all the criteria used to assess your springs.

Table 1. Summary of Rocky Mountain Academy Susceptibility Evaluation

Intake	Total Contaminant Inventory/Land Use Scores				System Construction Score	Final Susceptibility Ranking			
	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Spring #1	3	1	3	3	0	L	L	L	H*
Spring #2	3	1	3	3	0	L	L	L	H*

H = High Susceptibility, M = Moderate Susceptibility, Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H* - Indicates source automatically scored as high susceptibility.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For Rocky Mountain Academy, source water protection activities should focus on maintaining the high quality of water it currently enjoys by maintaining the watershed. Because parts of the watershed are outside the direct jurisdiction of Rocky Mountain Academy, it is important to establish partnerships with Forest Service and any private landowners to regulate land use changes or agricultural practices that could affect water quality. Due to the relatively short time involved with the movement of water in the small recharge zone for the springs, source water protection activities should be aimed at both short-term and long term management strategies.

Assistance

Public water suppliers and others may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Coeur d'Alene Regional IDEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

Website: <http://www.deq.state.id.us>

References Cited

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Division of Environmental Quality, 1994. Ground Water and Soils Reconnaissance of the Lower Payette Area, Payette County, Idaho. Ground Water Quality Technical Report No. 5. Idaho Division of Environmental Quality. December 1994.

EPA (U.S. Environmental Protection Agency), 1997, State Methods for Delineating Source Water Protection Areas for Surface Water Supplied Sources of Drinking Water, EPA 816-R-97-008, 40p.

U.S. Government Printing Office, 1995, Code of Federal Regulations, 40 CFR 112, Appendix C-III, Calculation of the Planning Distance

Idaho Department of Environmental Quality, 1999, *Protecting Drinking Water Sources in Idaho*.

Attachment A

Rocky Mountain Academy Susceptibility Analysis Worksheet

Susceptibility Analysis

Public Water System Name : **ROCKY MOUNTAIN ACADEMY**

Source: **SPRING #1 & #2**

Public Water System Number : **1110024**

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1. System Construction		Score			
Intake structure properly constructed	YES	0			
Infiltration gallery	YES	0			
Total System Construction Score		0			
		IOC	VOC	SOC	Microbial
2. Potential Contaminant Source / Land Use		Score	Score	Score	Score
Predominant land use type (land use or cover)	UNDEVELOPED	0	0	0	0
Farm chemical use high	NO	0	0	0	
Significant contaminant sources *	YES	MICROBIAL--GWUDI			
Sources of class II or III contaminants or Microbials	PRESENT WITHIN THE WATERSHED BOUNDARY AND 1000 FEET OF THE INTAKE				
(Score = Number of Sources X 2)		2	0	2	2
Agricultural lands within 500 feet	NO	0	0	0	0
Three or more contaminant sources	NO	0	0	0	0
Sources of turbidity in the watershed	YES	1	1	1	1
Total Potential Contaminant Source / Land Use Score		3	1	3	3
3. Final Susceptibility Source Score		3	1	3	3
4. Final Source Ranking		Low	Low	Low	High*

* Special consideration due to significant contaminant:

The final scores for the susceptibility analysis were determined from the addition of the Potential Contaminant Source/Land Use Score and Source Construction Score.

Final Susceptibility Ranking:

- 0 - 7 Low Susceptibility
- 8 - 15 Moderate Susceptibility
- > 16 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as **Superfund** is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.